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WATER PROGRAMS BRANCH



Mr. Donald Webster
USEPA Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

RE: Grenada Manufacturing Facility
Grenada, Mississippi
USEPA ID No.: MSD 007 037 278

Dear Mr. Webster:

In my February 21, 2001 letter to you I indicated that groundwater sampling results from October 2000 suggested the need for additional groundwater interim measures at the referenced facility. I further stated that a limited evaluation of potential interim measures was being performed and that the USEPA would be informed of the results of that evaluation by March 9. This letter serves to present the results of that evaluation.

INTERIM MEASURES EVALUATION

As stated in my February 21 letter, several remedial technologies were determined to be potentially appropriate for use as an interim measure at the site. These technologies have been evaluated for use at the site, both on an individual basis and in combination. Because these technologies were evaluated for potential use as an interim measure and because additional discussions regarding the applicability of various technologies has occurred in the past, this evaluation was limited to groundwater technologies that are known to have a good chance to work at the site. This limited evaluation of potential interim measures does not constitute a full remedial technology evaluation (i.e., Corrective Measures Study (CMS)). We anticipate that a CMS will be performed for the site at some future date and that the results of the various interim measures will be considered as part of that study. However, this evaluation did include consideration of incorporating interim measures into final corrective measures. Other considerations for selection of interim measures included effectiveness, implementability, operation and maintenance (O&M) requirements, and cost.

Based on the results of the site-wide groundwater sampling event completed in October 2000, it appears that the constituent plume has migrated to Riverdale Creek on the west side of the site. As such, it would appear that interim measures should

Mr. Donald Webster
March 9, 2001
Page 2

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consist of migration control measures and that the appropriate location for such additional interim measures would be near the creek. If necessary, migration control interim measures could later be combined with more aggressive source control measures as part of final corrective measures. Because the most appropriate location of these interim measures appears to be near Riverdale Creek, the use of groundwater extraction and treatment options was not favorably considered due to the high volume of groundwater (in the absence of a barrier wall) that would be anticipated to be collected in such close proximity to the creek. Rather, proven in-situ treatment technologies were evaluated, including:

- Permeable reactive wall (i.e., zero valence iron)
- Air sparging curtain
- Enhanced bioremediation

A permeable reactive wall using zero valence iron filings is generally thought to be the most appropriate option for use at this site and, therefore, it was used as a point of comparison for other options. The wall would likely be installed as a trench to the top of the underlying aquitard and would intercept a large cross-section of the groundwater plume depicted by the October 2000 sampling data. The actual wall location, length, and thickness would be determined during the design phase. Based on available information, the permeable reactive wall may also address metal concentrations (e.g., hexavalent chromium) in the groundwater, although metals are not significant contributors to the groundwater plume.

A sparge curtain would require the installation of a trench with permeable material (an installation similar to the permeable reactive wall) or the installation of a series of relatively closely spaced wells, along with the installation of equipment to provide the air and to extract and potentially treat the soil vapor. In both instances, the required mechanical systems would result in significant increases in the O&M requirements compared to a permeable reactive wall. In addition, data suggest that the groundwater in this area of the site is in a reductive state and that oxidizing the groundwater may cause counterproductive side effects (e.g., clogging of equipment or materials due to chemical precipitation). Lastly, we believe that an air sparge curtain will be no more effective than the permeable reactive wall. In fact, it is anticipated that a baffle system within the air sparge trench may be required to achieve the required treatment efficiency. Based on these conclusions, the permeable reactive wall is considered more appropriate for this site.

Enhanced bioremediation, such as by the addition of electron donors (e.g., lactic acid) and hydrogen-release compounds, also require the construction of a trench (an installation similar to the permeable reactive wall) and a distribution system or the installation of a row of relatively closely spaced injection wells. Again, both systems

Mr. Donald Webster
March 9, 2001
Page 3

would increase the O&M requirements over that needed for the permeable reactive wall. This option may have an initially lower capital cost compared to that of the permeable reactive wall, but the O&M costs would likely be much higher because the required compounds would need to be added repeatedly to achieve treatment as the groundwater plume continues to advance towards Riverdale Creek. In addition, the use of slow-release compounds will likely effect treatment at a somewhat slower rate than that expected for the permeable reactive wall. Based on these conclusions, slow-release compounds are considered less attractive than the permeable reactive wall for this site.

Hydraulic data collected at the site indicates that Riverdale Creek acts as a hydraulic barrier to migration under the creek away from the site. As such, we anticipate that performance monitoring of the permeable reactive wall will occur at appropriate intervals between the creek and the wall. Such monitoring is expected to document the effectiveness of the interim measure and the hydraulic conditions in the vicinity.

INTERIM MEASURES DESIGN/INSTALLATION

Subsequent to concurrence from the USEPA, the design phase for the selected interim measures (permeable reactive wall) will be initiated. As we discussed during a telephone conversation on February 28, the USEPA has requested that it be allowed to review and approve the design package. As such, once the design phase is complete, a package will be transmitted to the agencies for review. It is our understanding that the USEPA is currently considering the level of detail necessary for its review (i.e., whether a complete design package is necessary or if a design basis report will suffice). Please note that the schedule for completing the design and installation of interim measures presented in our February 21 letter did not include time for review and approval by the USEPA. This additional task will need to be considered for future scheduling efforts.

SUMMARY

In summary, the October 2000 groundwater sampling data suggest that migration control interim measures are warranted at the site in addition to the other interim measures that have been previously implemented. The data also suggest that the appropriate location for such measures is in the vicinity of Riverdale Creek. Grenada Manufacturing proposes to install a permeable reactive wall along Riverdale Creek in the general vicinity of the outfall ditch (SWMU 7) and extending south some distance to be determined during the design phase. If the USEPA concurs with this decision, the design can be completed and a package transmitted to the agency by the May 18, 2001 date specified in our February 21 letter. However, depending on the time required by the agency to provide comments and/or approval of the design, the

Mr. Donald Webster
March 9, 2001
Page 4

installation completion date of August 3, 2001 specified in the letter may need to be revisited. This schedule may also be impacted by the time required to obtain necessary permits, as well as addressing access issues for off-site activities.

If you have any questions or comments regarding the issues discussed in this letter, please feel free to contact us at (615) 255-2288.

Sincerely,

BROWN AND CALDWELL



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